PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference **P800719/WO/1**	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. **PCT/EP2004/012687**	International filing date *(day/month/year)* **10.11.2004**	Priority date *(day/month/year)* **06.12.2003**

International Patent Classification (IPC) or national classification and IPC
G06F9/46

Applicant
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1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of **8** sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☒ *(sent to the applicant and to the International Bureau)* a total of **4** sheets, as follows:

   ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

   ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))

   _____ , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

   ☒ Box No. I   Basis of the report

   ☐ Box No. II   Priority

   ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   ☐ Box No. IV   Lack of unity of invention

   ☒ Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   ☐ Box No. VI   Certain documents cited

   ☐ Box No. VII   Certain defects in the international application

   ☒ Box No. VIII   Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

Form PCT/IPEA/409 (cover sheet) (January 2004)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/012687

Box No. I	Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____ , which is the language of a translation furnished for the purposes of:

    ☐ international search (Rule 12.3 and 23.1(b))

    ☐ publication of the international application (Rule 12.4)

    ☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☐ the description:

    pages   3-11 _____ as originally filed/furnished

    pages*   2 _____ received by this Authority on   22.06.2005 with letter 16.06.2005

    pages*   1 _____ received by this Authority on   17.08.2005 with letter of 16.08.2005

☒ the claims:

    nos.   _____ as originally filed/furnished

    nos.*   _____ as amended (together with any statement) under Article 19

    nos.*   1-8 _____ received by this Authority on   17.08.2005 with letter of 16.08.2005

    nos.* _____ received by this Authority on _____

☒ the drawings:

    sheets   1/2,2/2 _____ as originally filed/furnished

    sheets* _____ received by this Authority on _____

    sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

    ☐ the description, pages _____

    ☐ the claims, nos. _____

    ☐ the drawings, sheets/figs _____

    ☐ the sequence listing *(specify)*: _____

    ☐ any table(s) related to sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

    ☐ the description, pages _____

    ☐ the claims, nos. _____

    ☐ the drawings, sheets/figs _____

    ☐ the sequence listing *(specify)*: _____

    ☐ any table(s) related to sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

Form PCT/IPEA/409 (Box No. I) (January 2004)

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-8		YES
	Claims			NO
Inventive step (IS)	Claims			YES
	Claims	1-8		NO
Industrial applicability (IA)	Claims	1-8		YES
	Claims			NO

2. Citations and explanations (Rule 70.7)

1 Documents

Reference is made to the following documents:

D1: US-A-5 544 054 (KAYANO ET AL) 6 August 1996 (1996-08-06)

D3: FINE-GRAINED MOBILITY IN THE EMERALD SYSTEM, ACM TRANSACTIONS ON COMPUTER SYSTEMS, ASSOCIATION FOR COMPUTING MACHINERY. NEW YORK, US, 1988-02-00.

Document D3 was not cited in the international search report. A copy of document D3 is enclosed.

2 Objections under PCT Article 33(3)

2.1 Document D1 is considered the prior art closest to the subject matter of claim 1. It discloses (the references between parentheses relate to D1):

a method for loading a software module to a processor unit of a control device in an automobile, networked by a databus, wherein

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

the software module is able to run in a plurality of control devices (column 4, lines 61-65) and the control devices exchange data through a databus (column 1, lines 55-56),

the choice as to the control device to which the software module is loaded is made depending on the computing capacity of the currently active control devices (column 1, lines 44-49),

each of the control devices is able to shut down the software module in case of high processor load (column 11, lines 14-16: every processor has at its disposal the computing capacity ("*load state*") of all the other processors; column 3, lines 45-54: Software modules ("*control tasks*") are terminated according to the computing capacity of the processors on a control device ("*actuator B*"), transferred to another control device ("*actuator A*") and executed therein),

and the method determines which of the further control devices has free computing capacity available and the software module is started on one of these control devices (column 7, lines 40-45).

2.2   The method of claim 1 **differs** from the method of document D1 by virtue of the following features:

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

the control device with the **maximum** free computing capacity is determined, and the information "is the software module running and if so, on which control device" and "which of the active control devices in the databus has the maximum free computing capacity" is sent to the databus in **rotation** or on **request**.

2.3   The feature according to which the control device having the maximum free computing capacity is selected is a frequently used load-balancing strategy which a person skilled in the art would use with the system of document D1, without thereby being inventive.

The transfer of identification information (for example, current host, state) is a necessity in systems having a mobile code (see, for example, document D3 (page 119, paragraph 4, lines 1-2: "… *An object descriptor contains information about the state and location of a global object …*"). Whether the transfer is carried out on request (see, for example, document D3, page 121, paragraph 2: "… *broadcast message …*") or by using other communication methods routine in networks (for example polling, notification, broadcast) is merely a selection among various obvious possibilities, which a person skilled in the art would make according to the circumstances.

2.4   The dependent claims contain no features which, combined with the features of any claim to which

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

they refer, meet the PCT requirements for novelty and inventive step. The reasons are as follows:

2.5   The feature of claim 2, according to which it is determined before the execution of the software module which of the further control devices has free computing capacity available and the software module is run on one of these control devices, is disclosed in document D1 (column 7, lines 40-45). The feature wherein the control device having the maximum free computing capacity is selected is a frequently used load-balancing strategy which a person skilled in the art would use in the system of document D1, without thereby being inventive.

2.6   The feature of claim 3, according to which the control device on which the software module runs compares its computing capacity with that of the further control devices and, depending on the result of the comparison, terminates the software module, is disclosed in document D1 (column 11, lines 14-16: every processor has at its disposal the computing capacity ("*load state*") of all the other processors; column 3, lines 45-54: Software modules ("*control tasks*") are terminated according to the computing capacity of the processors on a control device ("*actuator B*"), transferred to another control device ("*actuator A*") and executed therein).

2.7   Document D1 discloses the feature of claim 4, according to which the computing capacity of a

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

control device is determined from the processor
load (column 3, lines 2-4). In the case of
different processor types the processor type is
clearly also taken into consideration.

2.8   The feature of claim 5, according to which the
software module is started on the control device
with the maximum free computing capacity, is a
routine basic strategy in load-balancing systems.

2.9   The feature of claim 6, according to which the
software module is stored in the storage means of
the control devices, is disclosed in document D1
(column 3, lines 51-54: "… *memorizing means* …").

2.10   The feature of claim 8, according to which a
software module identification is transmitted to
the databus in rotation or on request, and wherein
the identification contains information about the
operating state and the control device running the
software module, is a possibility for distributing
information of this kind which is part of the
general knowledge of a person skilled in the art.

Box No. VIII	Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

3   Objections under PCT Article 6

Independent claim 1 contains features for which independent claim 9 does not have an equivalent feature, for example examination **in rotation**. Conversely, claim 9 contains features for which claim 1 does not contain a corresponding feature, for example a software module with a **secondary task**. As a result it is not clear which features are necessary for the purpose intended by the invention. Consequently, the definition of the subject matter of these claims is not clear.

For the purpose of the present report it was assumed that the invention is defined by the features of claim 1.